

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

**1-13. (cancelled)**

**14. (currently amended)** A pharmaceutical composition, comprising:

a ~~simple or multiple~~ water-in-oil-in-water emulsion, wherein said emulsion comprising in its oily phase ~~has an organic phase with one or more~~ extractant compounds that, when said emulsion is brought into contact with a medium, extract from said medium specific toxic molecules capable of binding to said extractant or extractants, ~~if appropriate and~~

optionally in combination with a pharmaceutically acceptable vehicle.

**15. (previously presented)** The pharmaceutical composition according to claim 14, wherein said composition is presented in a form for oral administration and, in a single or repeated dose.

**16. (withdrawn)** The pharmaceutical composition according to claim 14, wherein said composition is presented in a form for

topical administration and at a dose of approximately 2 to approximately 50 mg/cm<sup>2</sup> of skin.

17. **(withdrawn - currently amended)** The pharmaceutical composition according to claim 14, wherein said composition is presented in a form for parenteral administration by extracorporeal circulation and at a dose of approximately 500 to approximately 1000 g.

18. **(currently amended)** A multiple water-in-oil-in-water emulsion comprising in its ~~organic~~ oily phase one or more extractant compounds.

19. **(currently amended)** The multiple emulsion according to claim 18, ~~wherein said emulsion is in its organic~~ further comprising in its oily phase one or more lipophilic surfactants.

20. **(currently amended)** The multiple emulsion according to claim 18, further comprising an internal aqueous phase with one or more de-extractant compounds.

21. **(withdrawn - currently amended)** The multiple emulsion according to claim 18, comprising ~~having~~ an external aqueous phase with one or more hydrophilic surfactants.

22. (withdrawn) The multiple water-in-oil-in-water emulsion according to claim 18, further comprising:

- an external aqueous phase containing one or more hydrophilic surfactants with an ether bond such as ethylene oxide and propylene oxide copolymers, oxyethylenated fatty alcohols, or hydrophilic surfactants with an ester bond such as polyoxyethylenated sorbitan esters, the mass ratio of these surfactants with respect to the external aqueous phase being comprised between approximately 0.1 and approximately 10%.

- an internal simple emulsion comprising:

\* an organic phase separating the external aqueous phase above and the internal aqueous phase below, this organic phase containing:

- one or more extractants, as defined in claim 3, the mass ratio of the extractant or extractants with respect to the organic phase being comprised between approximately 0.1 and approximately 20%,
- one or more lipophilic surfactants with an ether bond, such as the alkyl dimethicone copolyols, or with an amine bond such as long-chain condensed polyamines, or sorbitan or glycol esters, the mass ratio of the lipophilic surfactant or surfactants with respect to the organic phase being comprised between approximately 0.5 and approximately 20%,

- hydrocarbons such as liquid paraffins, perhydrosqualene or silicones or synthetic esters,

\* an internal aqueous phase containing one or more de-extractants, and wherein

the external aqueous phase representing approximately 1 to approximately 80% by mass of the simple emulsion.

**23. (withdrawn)** The multiple emulsion according to claim 18, for the detoxication of acid molecules, such as acetylsalicylic acid, comprising:

- an external aqueous phase containing an ethylene oxide and propylene oxide copolymer as hydrophilic surfactant, at a rate of approximately 0.5 to approximately 2% by mass with respect to the total mass of the external aqueous phase,

- an organic phase separating the external aqueous phase above and the internal aqueous phase below, and containing:

- liquid paraffin,
- trilaurylamine as extractant, at a rate of approximately 0.1% to approximately 3% by mass with respect to the total mass of the organic phase,
- cetyl dimethicone copolyol as lipophilic surfactant, at a rate of approximately 1 to approximately 10% by mass with respect to the total mass of the organic phase,

- an internal aqueous phase containing as de-extractant soda, at a concentration such that the pH is greater than or equal

to 13, and magnesium sulphate, at a rate of approximately 2 to approximately 6% by mass with respect to the total mass of the internal aqueous phase,

the mass ratio between the internal aqueous phase and the organic phase being comprised between approximately 25% and approximately 200%, and the mass ratio between the external aqueous phase and the primary simple emulsion being comprised between approximately 10% and approximately 90%.

**24. (previously presented)** A method of prevention or treatment of intoxications by oral, topical or parenteral route, or of detoxication of surfaces by simple application to the abovementioned surfaces, comprising administering an efficient amount of simple or multiple emulsions comprising in their organic phase one or more extractant compounds capable, when said emulsions are brought into contact with a medium, either biological such as gastric liquid, skin or blood, or artificial such as metal or plastic surfaces, of extracting from said medium specific toxic molecules capable of binding to said extractant or extractants.

**25. (previously presented)** The method of claim 24, further comprising trapping toxic molecules with a simple water-in-oil, or multiple water-in-oil-in-water emulsions, the internal aqueous phase of which comprises one or more de-extractant

compounds, trapping the toxic molecules extracted from the medium.

**26. (previously presented)** The method of claim 24, wherein the extractant is chosen from:

- amine derivatives, such as the primary, secondary or tertiary amines or quaternary ammonium salts, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, in particular trioctylamine or trilaurylamine, when the toxic molecule to be eliminated has an acid or anionic character,

- organic acids, such as organophosphorated acids, thiophosphorated acids, carboxylic acids, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a basic or cationic character,

- solvating molecules, such as alcohols, organophosphates, phosphine oxides, organosulphides or sulphoxides, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a neutral character.

**27. (previously presented)** The method of claim 24, wherein the internal aqueous phase of the simple water-in-oil or multiple water-in-oil-in-water emulsion comprises one or

more de-extractant compounds, trapping the toxic molecules extracted from the medium, chosen from:

- bases such as NaOH, KOH,  $\text{Na}_2\text{CO}_3$ , when the toxic molecule to be eliminated has an acid or anionic character,
- ionic salts such as NaCl,  $\text{NH}_4\text{Cl}$  or  $\text{NaNO}_3$ , when the toxic molecule to be eliminated has an anionic character,
- acids such as hydrochloric acid or lactic acid, when the toxic molecule to be eliminated has a basic or cationic character,
- compounds which are oxide-reducing or chelating in character, such as chromium (VI) salts, thiourea, ethylene diamine tetracetic acid, chlorinated or fluorinated derivatives, ascorbic acid, when the toxic molecule to be eliminated has a neutral character.

**28. (previously presented)** The method of claim 24, wherein said emulsion is a simple water-in-oil emulsions comprising:

- an external organic phase containing:
  - one or more extractants, the mass ratio of the extractant or extractants with respect to the organic phase being comprised between approximately 0.1 and approximately 20%,
  - said extractant being chosen from the group consisting of:

- amine derivatives, such as the primary, secondary or tertiary amines or quaternary ammonium salts, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, in particular trioctylamine or trilaurylamine, when the toxic molecule to be eliminated has an acid or anionic character,
- organic acids, such as organophosphorated acids, thiophosphorated acids, carboxylic acids, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a basic or cationic character,
- solvating molecules, such as alcohols, organophosphates, phosphine oxides, organosulphides or sulphoxides, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a neutral character,
- one or more lipophilic surfactants with an ether bond, such as the alkyl dimethicone copolyols, or with an amine bond such as long-chain condensed polyamines, or sorbitan or glycol esters, the mass ratio of the lipophilic surfactant or surfactants with respect to the organic phase being comprised between



approximately 0.5 and approximately 20%,

- hydrocarbons (qs) such as liquid paraffins,  
perhydrosqualene or silicones or synthetic esters,

- an internal aqueous phase containing one or more de-extractants, and optionally an additive such as an electrolyte or a sugar, the mass ratio of the internal aqueous phase with respect to the emulsion being comprised between approximately 1 and approximately 80%,

said de-extractant being chosen from the group consisting of:

- bases such as NaOH, KOH,  $\text{Na}_2\text{CO}_3$ , when the toxic molecule to be eliminated has an acid or anionic character,
- ionic salts such as NaCl,  $\text{NH}_4\text{Cl}$  or  $\text{NaNO}_3$ , when the toxic molecule to be eliminated has an anionic character,
- acids such as hydrochloric acid or lactic acid, when the toxic molecule to be eliminated has a basic or cationic character,
- compounds which are oxide-reducing or chelating in character, such as chromium (VI) salts, thiourea, ethylene diamine tetracetic acid, chlorinated or fluorinated derivatives, ascorbic acid, when the toxic molecule to be eliminated has a neutral character.

29. (previously presented) The method of claim 24, wherein said emulsion is a multiple water-in-oil-in-water emulsions comprising:

- an external aqueous phase containing one or more hydrophilic surfactants with an ether bond such as ethylene oxide and propylene oxide copolymers, oxyethylenated fatty alcohols, or hydrophilic surfactants with an ester bond such as polyoxyethylenated sorbitan esters, the mass ratio of these surfactants with respect to the external aqueous phase being comprised between approximately 0.1 and approximately 10%,
- an internal simple emulsion, comprising:

- \* an organic phase separating the external aqueous phase above and the internal aqueous phase below, this organic phase containing:

- one or more extractants, the mass ratio of the extractant or extractants with respect to the organic phase being comprised between approximately 0.1 and approximately 20%,

- said extractant being chosen from the group consisting of:

- amine derivatives, such as the primary, secondary or tertiary amines or quaternary ammonium salts, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, in

particular trioctylamine or trilaurylamine, when the toxic molecule to be eliminated has an acid or anionic character,

- organic acids, such as organophosphorated acids, thiophosphorated acids, carboxylic acids, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a basic or cationic character,
- solvating molecules, such as alcohols, organophosphates, phosphine oxides, organosulphides or sulphoxides, comprising one or more carbon chains each comprising approximately 1 to 18 carbon atoms, when the toxic molecule to be eliminated has a neutral character,
- one or more lipophilic surfactants with an ether bond, such as the alkyl dimethicone copolyols, or with an amine bond such as long-chain condensed polyamines, or sorbitan or glycol esters, the mass ratio of the lipophilic surfactant or surfactants with respect to the organic phase being comprised between approximately 0.5 and approximately 20%,
- hydrocarbons such as liquid paraffins, perhydrosqualene or silicones or synthetic esters,

\* an internal aqueous phase containing one or more de-extractants, said de-extractant being chosen from the group consisting of:

- bases such as NaOH, KOH,  $\text{Na}_2\text{CO}_3$ , when the toxic molecule to be eliminated has an acid or anionic character,
- ionic salts such as NaCl,  $\text{NH}_4\text{Cl}$  or  $\text{NaNO}_3$ , when the toxic molecule to be eliminated has an anionic character,
- acids such as hydrochloric acid or lactic acid, when the toxic molecule to be eliminated has a basic or cationic character,
- compounds which are oxide-reducing or chelating in character, such as chromium (VI) salts, thiourea, ethylene diamine tetracetic acid, chlorinated or fluorinated derivatives, ascorbic acid, when the toxic molecule to be eliminated has a neutral character,

the external aqueous phase representing approximately 1 to approximately 80% by mass of the simple emulsion.

**30. (previously presented)**                      The method of claim 24, for the detoxication of acid molecules, wherein said emulsions contain in their organic phase an extractant which is a tertiary amine, and in that the internal aqueous phase of said emulsions

comprises one de-extractant compound, trapping the toxic molecules extracted from the medium, which is soda NaOH.

**31. (previously presented)** The method of claim 24, for the detoxication of acid molecules, wherein said emulsion comprises:

- an external organic phase containing:
  - liquid paraffin,
  - trilaurylamine as extractant, at a rate of approximately 0.1% to approximately 3% by mass with respect to the external organic phase,
  - cetyl dimethicone copolyol as lipophilic surfactant, at a rate of approximately 1 to approximately 10% by mass with respect to the external organic phase,
- an internal aqueous phase containing, as de-extractant, soda, at a concentration such that the pH is greater than or equal to 13,

the mass ratio between the aqueous phase and the total emulsion being comprised between approximately 10% and approximately 70%.

**32. (previously presented)** The method of claim 24, for the detoxication of acid molecules, wherein the emulsion is a multiple water-in-oil-in-water emulsions comprising:

- an external aqueous phase containing an ethylene oxide

and propylene oxide copolymer as hydrophilic surfactant, at a rate of approximately 0.5 to approximately 2% by mass with respect to the total mass of the external aqueous phase,

- an organic phase separating the external aqueous phase above and the internal aqueous phase below, and containing:

- liquid paraffin,
- trilaurylamine as extractant, at a rate of approximately 0.1% to approximately 3% by mass with respect to the total mass of the organic phase,
- cetyl dimethicone copolyol as lipophilic surfactant, at a rate of approximately 1 to approximately 10% by mass with respect to the total mass of the organic phase,

- an internal aqueous phase containing, as de-extractant, soda, at a concentration such that the pH is greater than or equal to 13, and magnesium sulphate, at a rate of approximately 2 to approximately 6% by mass with respect to the total mass of the internal aqueous phase,

the mass ratio between the internal aqueous phase and the organic phase being comprised between approximately 25% and approximately 200%, and the mass ratio between the external aqueous phase and the primary simple emulsion being comprised between approximately 10% and approximately 90%.

**33. (previously presented)**

The method of claim

24, for the detoxication of compounds with a very slightly marked

acid-basic character, such as paracetamol, comprising the use of simple or multiple emulsions, characterized in that said emulsions contain in their organic phase an extractant which is a long-chain alcohol, in particular octanol, and in that the internal aqueous phase of said emulsions comprises one de-extractant compound, trapping the toxic molecules extracted from the medium, which is NaOH.

**34. (previously presented)** The method of claim 24, for the detoxication of compounds with a very slightly marked acid-basic character, such as paracetamol, comprising the use of an effective amount of simple water-in-oil emulsions comprising:

- an external organic phase containing:
  - liquid paraffin,
  - octanol as extractant, at a rate of approximately 0.1% to approximately 20% by mass with respect to the external organic phase,
  - a condensed polyamine on succinic acid substituted by a polyisobutene chain, such as ECA 4360, as lipophilic surfactant, at a rate of approximately 1 to approximately 10% by mass with respect to the external organic phase,
- an internal aqueous phase containing, as de-extractant, soda at a concentration such that the pH is greater than 13,

the mass ratio between the aqueous phase and the total emulsion being comprised between approximately 10% and approximately 70%.

**35. (previously presented)** The method of claim 24, for the detoxication of compounds wherein said emulsions contain in their organic phase an extractant which is a long-chain organothiophosphorated acid, in particular di-ethylhexyl-monothiophosphinic acid (Cyanex 302), and in that the internal aqueous phase of said emulsions comprises one de-extractant compound, trapping the toxic molecules extracted from the medium, which is hydrochloric acid.

**36. (previously presented)** The method of claim 24, for the detoxication of compounds wherein the emulsion is a simple water-in-oil emulsions comprising:

- an external organic phase containing:
  - liquid paraffin,
  - Cyanex 302 as extractant, at a rate of approximately 0.1% to approximately 5% by mass with respect to the external organic phase,
  - ECA 4360 as lipophilic surfactant, at a rate of approximately 1 to approximately 10% by mass with respect to the organic phase,



- an internal aqueous phase containing hydrochloric acid  
at a concentration higher than  $0.2 \text{ mol.L}^{-1}$ , as de-extractant,

the mass ratio between the aqueous phase and the total  
emulsion being comprised between approximately 10% and  
approximately 70%.